IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: William C. LYNCH	:	Group Art Unit:
Original Patent No. 6,002,916	:	Examiner:
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For: SPACE-BASED SERVER NETWORK ARCHITECTURE

Commissioner for Patents
Washington, D.C. 20231

REISSUE APPLICATION PRELIMINARY AMENDMENT

Dear Sir,

Please amend the Reissue Application filed herewith by making the following changes:

IN THE CLAIMS:

Please ADD the following new claims:

19. A space-based server network architecture comprising:

a) a client;

b) a server satellite located in earth orbit, said server satellite including:

i) communications downlink means for providing intercommunication with designated and authorized earth stations within its field of view;

ii) communications link means for providing intercommunication with a client within its field of view; and

c) whereby said client can at any time transmit its mission data to a designated earth station, irrespective of its location on earth, by transmitting said mission data over said communications link means to said server satellite within its communication field of view which, in turn, passes said mission data to the designated earth station over said communications downlink means.

20. A space-based server network architecture as in claim 19, wherein said communications downlink means comprise a high frequency band spot beam antenna sufficient to provide jam-resistant communications.

21. A space-based server network architecture as in claim 19, wherein said communications link means comprises a radio frequency communications link.

22. A space-based server network architecture as in claim 19, wherein said communications link means comprises a W-band communications link.

23. A space-based server network architecture as in claim 22, wherein said client is a client satellite in earth orbit.

24. A space-based server network architecture as in claim 23, wherein said communications link means further includes an omni RF communications link to ensure tracking capability and connectivity between said server satellite and said client satellite during initial launch and orbit insertion of said client satellite and in the event of tumbling or partial loss of attitude stabilization of said client satellite.

25. A space-based server network architecture as in claim 23, wherein:

a) said server satellite is placed in geosynchronous orbit; and

b) said client satellite is placed in either one of a low or medium earth orbit.

26. A space-based server network architecture as in claim 19, wherein said server satellite includes high capacity onboard memory sufficient for cache storage or longer term storage of earth station generated communications data.

27. A space-based server network architecture as in claim 19, wherein said client includes communications links oriented pointed upwards towards said server satellite.

28. The space-based server network architecture of claim 19, wherein the client comprises an airborne platform.

29. The space-based server network architecture of claim 19, wherein the client comprises an exo-atmospheric platform.

30. The space-based server network architecture of claim 19, wherein the earth station comprises a fixed-location ground station.

31. The space-based server network architecture of claim 19, wherein the earth station comprises a mobile ground station.

32. The space-based server network architecture of claim 19, wherein the earth station comprises a sea platform.

33. A space-based server network architecture comprising:

a) a plurality of clients;

b) a plurality of server satellites located in one or more earth orbits, each of said server satellites including:

i) communications downlink means for providing intercommunication with designated and authorized earth stations within its field of view;

ii) communications crosslink means for providing intercommunication with other server satellites within its field of view;

ii) communications link means for providing intercommunication with a client within its field of view; and

c) whereby each client can at any time transmit its mission data to a designated earth station, irrespective of its location on earth, by transmitting said mission data over said communications link means to said server satellite within its communication field of view which, in turn, passes said mission data to the designated earth station over said communications downlink means.

34. A space-based server network architecture as in claim 33, wherein said communications downlink means comprise a high frequency band spot beam antenna sufficient to provide jam-resistant communications.

35. A space-based server network architecture as in claim 33, wherein said communications crosslink means comprises a wide-band optical laser communications link.

36. A space-based server network architecture as in claim 33, wherein said communications crosslink means comprises a radio frequency communications link.

37. A space-based server network architecture as in claim 33, wherein said communications link means comprises a W-band communications link.

38. A space-based server network architecture as in claim 33, wherein said clients are client satellites in one or more earth orbits.

39. A space-based server network architecture as in claim 38, wherein said communications link means further includes an omni RF communications link to ensure tracking capability and connectivity between said server satellites and said client satellites during initial launch and orbit insertion of said client satellites and in the event of tumbling or partial loss of attitude stabilization of said client satellites.

40. A space-based server network architecture as in claim 38, wherein:

a) each said server satellite is placed in geosynchronous orbit; and

b) each said client satellite is placed in either one of a low or medium earth orbit.

41. A space-based server network architecture as in claim 33, wherein said server satellite includes high capacity onboard memory sufficient for cache storage or longer term storage of earth station generated communications data.

42. A space-based server network architecture as in claim 33, wherein at least one said client includes communications links oriented pointed upwards towards said server satellite.

43. A space-based server network architecture as in claim 33, wherein said plurality of clients include communications links oriented pointed upwards towards said server satellite.

44. The space-based server network architecture of claim 33, wherein the client comprises an airborne platform.

45. The space-based server network architecture of claim 33, wherein the client comprises an exo-atmospheric platform.

46. The space-based server network architecture of claim 33, wherein the earth station comprises a fixed-location ground station.

47. The space-based server network architecture of claim 33, wherein the earth station comprises a mobile ground station.

48. The space-based server network architecture of claim 33, wherein the earth station comprises a sea platform.

49. A space-based server network architecture comprising:

a) at least one earth station;

b) a client;

c) a server satellites located earth orbit, said server satellites including:

i) communications downlink means for providing intercommunication with said at least one earth station;

ii) communications link means for providing intercommunication with a client within its field of view; and

d) whereby said client can at any time transmit its mission data to said at least one earth station, irrespective of its location on earth, by transmitting said mission data over said communications link means to said server satellite within its communication field of view which, in turn, passes

said mission data to said at least one earth station over said communications downlink means.

50. A space-based server network architecture as in claim 49, wherein said communications downlink means comprise a high frequency band spot beam antenna sufficient to provide jam-resistant communications.

51. A space-based server network architecture as in claim 49, wherein said communications link means comprises a W-band communications link.

52. A space-based server network architecture as in claim 49, wherein said client is a client satellite in earth orbit.

53. A space-based server network architecture as in claim 52, wherein said communications link means further includes an omni RF communications link to ensure tracking capability and connectivity between a server satellite and a client satellite during initial launch and orbit insertion of said client satellite and in the event of tumbling or partial loss of attitude stabilization of said client satellite.

54. A space-based server network architecture as in claim 52, wherein:

a) said server satellite is placed in geosynchronous orbit; and

b) said client satellite is placed in either one of a low or medium earth orbit.

55. A space-based server network architecture as in claim 49, wherein said client includes communications links oriented pointed upwards towards said server satellite.

56. A space-based server network architecture as in claim 49, wherein said at least one earth station comprises land-based, sea-based and airborne platforms.

57. A space-based server network architecture comprising:

a) at least one earth station;

b) a plurality of clients;

c) a plurality of server satellites located spaced apart in at least one earth orbit, each of said server satellites including:

i) communications downlink means for providing intercommunication with said at least one earth station;

ii) communications crosslink means for providing intercommunications with other server satellites within its field of view;

iii) communications link means for providing intercommunication with a client within its field of

view; and

d) whereby each client can at any time transmit its mission data to said at least one earth station, irrespective of its location on earth, by transmitting said mission data over said communications link means to a server satellite within its communication field of view which, in turn, passes said mission data to said at least one earth station over said communications downlink means.

58. A space-based server network architecture as in claim 57, wherein said communications downlink means comprise a high frequency band spot beam antenna sufficient to provide jam-resistant communications.

59. A space-based server network architecture as in claim 57, wherein said communications crosslink means comprises a wide-band optical laser communications link.

60. A space-based server network architecture as in claim 57, wherein said communications crosslink means comprises a radio frequency communications link.

61. A space-based server network architecture as in claim 57, wherein said communications link means comprises a W-band communications link.

62. A space-based server network architecture as in claim 57, wherein said client is a client satellite in earth orbit.

63. A space-based server network architecture as in claim 62, wherein said communications link means further includes an omni RF communications link to ensure tracking capability and connectivity between a server satellite and a client satellite during initial launch and orbit insertion of said client satellite and in the event of tumbling or partial loss of attitude stabilization of said client satellite.

64. A space-based server network architecture as in claim 62, wherein:

a) said server satellites are placed in geosynchronous orbit; and

b) said client satellites are placed in either one of a low or medium earth orbit.

65. A space-based server network architecture as in claim 57, wherein said plurality of clients include communications links oriented pointed upwards towards said server satellites.

66. A space-based server network architecture as in claim 57, wherein said at least one earth station comprises land-based, sea-based and airborne platforms.

67. A space-based server network architecture comprising:

a client operable to intercommunicate data using a network protocol over a first communications link; and

a server satellite located in earth orbit, the server satellite including the first communications link operable to provide intercommunications using a network protocol with the client, and a second communications link operable to provide intercommunications using a network protocol with an earth station, and the server satellite operable to intercommunicate data between the client and the earth station.

68. The space-based server network architecture of claim 67, wherein the client comprises a client satellite in earth orbit.

69. The space-based server network architecture of claim 68, wherein the earth orbit of the client satellite is below the earth orbit of the server satellite.

70. The space-based server network architecture of claim 67, wherein the client comprises an airborne platform.

71. The space-based server network architecture of claim 67, wherein the client comprises an exo-atmospheric platform.

72. The space-based server network architecture of claim 67, wherein the earth station comprises a fixed-location ground station.

73. The space-based server network architecture of claim 67, wherein the earth station comprises a mobile ground station.

74. The space-based server network architecture of claim 67, wherein the earth station comprises a sea platform.

75. The space-based server network architecture of claim 67, wherein the network protocol comprises a form of transmission control protocol/internet protocol.

76. The space-based server network architecture of claim 67, wherein the network protocol comprises a form of space communications protocol standards-transport protocol.

77. The space-based server network architecture of claim 67, wherein the earth station comprises an airborne platform.

78. The space-based server network architecture of claim 67, further comprising a plurality of clients operable to intercommunicate data over the first communications link and wherein the server satellite is further operable to provide intercommunications using a network protocol among the plurality of clients.

79. The space-based server network architecture of claim 78, wherein at least one client comprises a client satellite in earth orbit.

80. The space-based server network architecture of claim 79, wherein the earth obit of the client satellite is below the earth orbit of the server satellite.

81. The space-based server network architecture of claim 78, wherein at least one client comprises an airborne platform.

82. The space-based server network architecture of claim 78, wherein at least one client comprises an exo-atmospheric platform.

83. The space-based server network architecture of claim 67, further comprising a plurality of server satellites, wherein each server satellite further includes a third communications link operable to provide intercommunications among the plurality of server satellites using a network protocol, and wherein each server satellite is further operable to intercommunicate data among the client, the earth station, and the plurality of server satellites.

84. The space-based server network architecture of claim 83, further comprising a plurality of clients operable to intercommunicate data over the first communications link and wherein the server satellite is further operable to provide intercommunications using a network protocol among the plurality of clients, the earth station, and the plurality of server satellites..

85. The space-based server network architecture of claim 84, wherein the second communications link is further operable to provide intercommunications using a network protocol with a plurality of earth stations and wherein the server satellite is further operable to provide intercommunications using a network protocol among the plurality of clients, the plurality earth stations, and the plurality of server satellites.

86. The space-based server network architecture of claim 85, wherein at least one client comprises a client satellite in earth orbit.

87. The space-based server network architecture of claim 86, wherein the earth obit of the client satellite is below the earth orbit of the server satellite.

88. The space-based server network architecture of claim 87, wherein at least one client comprises an airborne platform.

89. The space-based server network architecture of claim 87, wherein at least one client comprises an exo-atmospheric platform.

90. The space-based server network architecture of claim 87, wherein the network protocol comprises a form of transmission control protocol/internet protocol.

91. The space-based server network architecture of claim 87, wherein the network protocol comprises a form of space communications protocol standards-transport protocol.

92. The space-based server network architecture of claim 87, wherein at least one earth station comprises a fixed-location ground station.

93. The space-based server network architecture of claim 87, wherein at least one earth station comprises a mobile ground station.

94. The space-based server network architecture of claim 87, wherein at least one earth station comprises a sea platform.

95. The space-based server network architecture of claim 87, wherein at least one earth station comprises an airborne platform.

96. A server satellite located in earth orbit comprising:

a first communications link operable to provide intercommunications using a network protocol with a client; and

a second communications link operable to provide intercommunications using a network protocol with an earth station;

wherein the server satellite is operable to intercommunicate data between the client and the earth station.

97. The server satellite of claim 96, wherein the first communications link is further operable to intercommunicate data with plurality of clients and wherein the server satellite is further operable to provide intercommunications using a network protocol among the plurality of clients.

98. The server satellite of claim 97, wherein the second communications link is further operable to provide intercommunications using a network protocol with a plurality of earth stations and wherein the server satellite is further operable to provide intercommunications using a network protocol among the plurality of clients and the plurality earth stations.

99. The server satellite of claim 96, wherein at least one client comprises a client satellite in earth orbit.

100. The server satellite of claim 99, wherein the earth obit of the client satellite is below the earth orbit of the server satellite.

101. The server satellite of claim 96, wherein at least one client comprises an airborne platform.

102. The server satellite of claim 96, wherein at least one client comprises an exo-atmospheric platform.

103. The server satellite of claim 96, wherein the network protocol comprises a form of transmission control protocol/internet protocol.

104. The server satellite of claim 96, wherein the network protocol comprises a form of space communications protocol standards-transport protocol.

105. The server satellite of claim 96, wherein at least one earth station comprises a fixed-location ground station.

106. The server satellite of claim 96, wherein at least one earth station comprises a mobile ground station.

107. The server satellite of claim 96, wherein at least one earth station comprises a sea platform.

108. The server satellite of claim 96, wherein at least one earth station comprises an airborne platform.

109. A method of communication using a space-based server network architecture comprising the steps of:

intercommunicating between a client and an earth station by performing the steps of:

intercommunicating between a client and a server satellite located in earth orbit using a network protocol over a first communications link; and

intercommunicating between the server satellite and an earth station using a network protocol over a second communications link.

110. The method of claim 109, wherein the client comprises a client satellite in earth orbit.

111. The method of claim 110, wherein the earth obit of the client satellite is below the earth orbit of the server satellite.

112. The method of claim 109, wherein the client comprises an airborne platform.

113. The method of claim 109, wherein the client comprises an exo-atmospheric platform.

114. The method of claim 109, wherein the network protocol comprises a form of transmission control protocol/internet protocol.

115. The method of claim 109, wherein the network protocol comprises a form of space communications protocol standards-transport protocol.

116. The method of claim 109, wherein the earth station comprises a fixed-location ground station.

117. The method of claim 109, wherein the earth station comprises a mobile ground station.

118. The method of claim 109, wherein the earth station comprises a sea platform.

119. The method of claim 109, wherein the earth station comprises an airborne platform.

120. The method of claim 109, further comprising the step of:

intercommunicating among a plurality of clients using a network protocol over the first communications link.

121. The method of claim 120, wherein at least one client comprises a client satellite in earth orbit.

122. The method of claim 121, wherein the earth obit of the client satellite is below the earth orbit of the server satellite.

123. The method of claim 120, wherein at least one client comprises an airborne platform.

124. The method of claim 120, wherein at least one client comprises an exo-atmospheric platform.

125. The method of claim 109, further comprising the step of:

intercommunicating among a plurality of clients and a plurality of server satellites using a network protocol.

126. The method of claim 125, further comprising the step of:

intercommunicating among the plurality of server satellites using a network protocol over a third communication link.

127. The method of claim 126, further comprising the step of:

intercommunicating among the plurality of clients, the plurality of server satellites, and the earth station using a network protocol.

128. The method of claim 127, further comprising the step of:

intercommunicating among the plurality of clients, the plurality of server satellites and a plurality of earth stations using a network protocol.

129. The method of claim 128, wherein at least one client comprises a client satellite in earth orbit.

130. The method of claim 129, wherein the earth obit of the client satellite is below the earth orbit of the server satellite.

131. The method of claim 128, wherein at least one client comprises an airborne platform.

132. The method of claim 128, wherein at least one client comprises an exo-atmospheric platform.

133. The method of claim 128, wherein the network protocol comprises a form of transmission control protocol/internet protocol.

134. The method of claim 128, wherein the network protocol comprises a form of space communications protocol standards-transport protocol.

135. The method of claim 128, wherein at least one earth station comprises a fixed-location ground station.

136. The method of claim 128, wherein at least one earth station comprises a mobile ground station.

137. The method of claim 128, wherein at least one earth station comprises a sea platform.

138. The method of claim 128, wherein at least one earth station comprises an airborne platform.

A statement of the status, as of the date of the amendment, of all patent claims and of all added claims, and an explanation of the support in the disclosure of the patent for the changes made to the claims, as required by 37 CFR §1.173(c), is included in a separate paper.

Respectfully Submitted,

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